

Notes on the Western United States Distribution
of *Geopinus incrassatus* LeConte
(Coleoptera: Carabidae)

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Abstract.—*Geopinus incrassatus* LeConte is reported from west of the Continental Divide in the States of Idaho, Nevada, Utah, and Arizona, and western Colorado for the first time. Habitats in the western United States are largely active, xeric, aeolian sand dunes. Specimens from Idaho and Nevada differ morphologically from populations elsewhere by the occurrence of setiferous punctures on the third elytral interval.

Adults of *Geopinus incrassatus* LeConte are burrowing anisodactyline carabid beetles. This species has been reported from throughout the eastern United States and southern Canada (Blatchley, 1910; Ball, 1960, 1968; Lindroth, 1968; Noonan, 1973). Here, we present the first published report for the occurrence of this species from west of the Continental Divide, although its occurrence in the region has been known at least since 1956, based on specimens at the University of Idaho, and conversations with M. H. Hatch, W. F. Barr, and L. K. Russell.

We have collected or examined specimens of *G. incrassatus* from localities in southern Idaho, northern Nevada, northeastern Arizona, northwestern Colorado, and eastern Utah. The following records have been collated: ARIZONA, Coconino County, Moenkopi dunes, 2.4 mi S Moenkopi, 17.VII.1975, Fred Andrews & A. R. Hardy, collected at blacklight (9, CDFa); 2.6 mi SE Moenkopi, 30.IV.1978, F. G. Andrews & A. R. Hardy, sifted from sand dunes (1 elytron, CDFa); Chinle, 2.VII.1942, M. H. Frost, Jr. (1, UAZ). COLORADO, Moffat County, 1.VIII.1986, Kondratieff, BLT-Dinosaur (1, CSU). IDAHO, Owyhee County, Bruneau sand dunes, 7–8 mi NNE Bruneau, 1.IV.1956 (2, UID); Bruneau sand dunes, near Bruneau, 5.IV.1975, W. H. Clark (1, CIDA); Bruneau, 15.V.1975, G. A. Shook (1, CIDA), 8.III.1975, G. A. Shook (1, CIDA); Sand Dune Lake [prob. Bruneau dunes], 9.IV.1963, T. R. Coupe (1, UID); [Fremont County] St. Anthony sand dunes, 4.VI.1964, W. F. Barr (1, UID), 14.IX.1965, R. L. Penrose (7, UID). NEVADA, Humboldt County, Winnemucca sand dunes, 10 mi N Winnemucca along Hwy 95, 6.IX–15.XII.1982, W. H. Clark & P. E. Blom, ethylene glycol pitfalls (17, CIDA); 10 mi N, 5 mi W Winnemucca, sand dunes, 27.II.1975, D. Giuliani (1 pair elytra, CDFa). UTAH, Emery County, 17 mi N Hanksville, “dunes” nr. Gilson Butte well, 26.VII.1978, Andrews & Hardy, walking dunes at night (1+1 elytron, CDFa); [San Rafael dunes] 2 air mi W Little Gilson Butte, 15–17.IX.1980, F. Parker (50, USU). See Fig. 1.

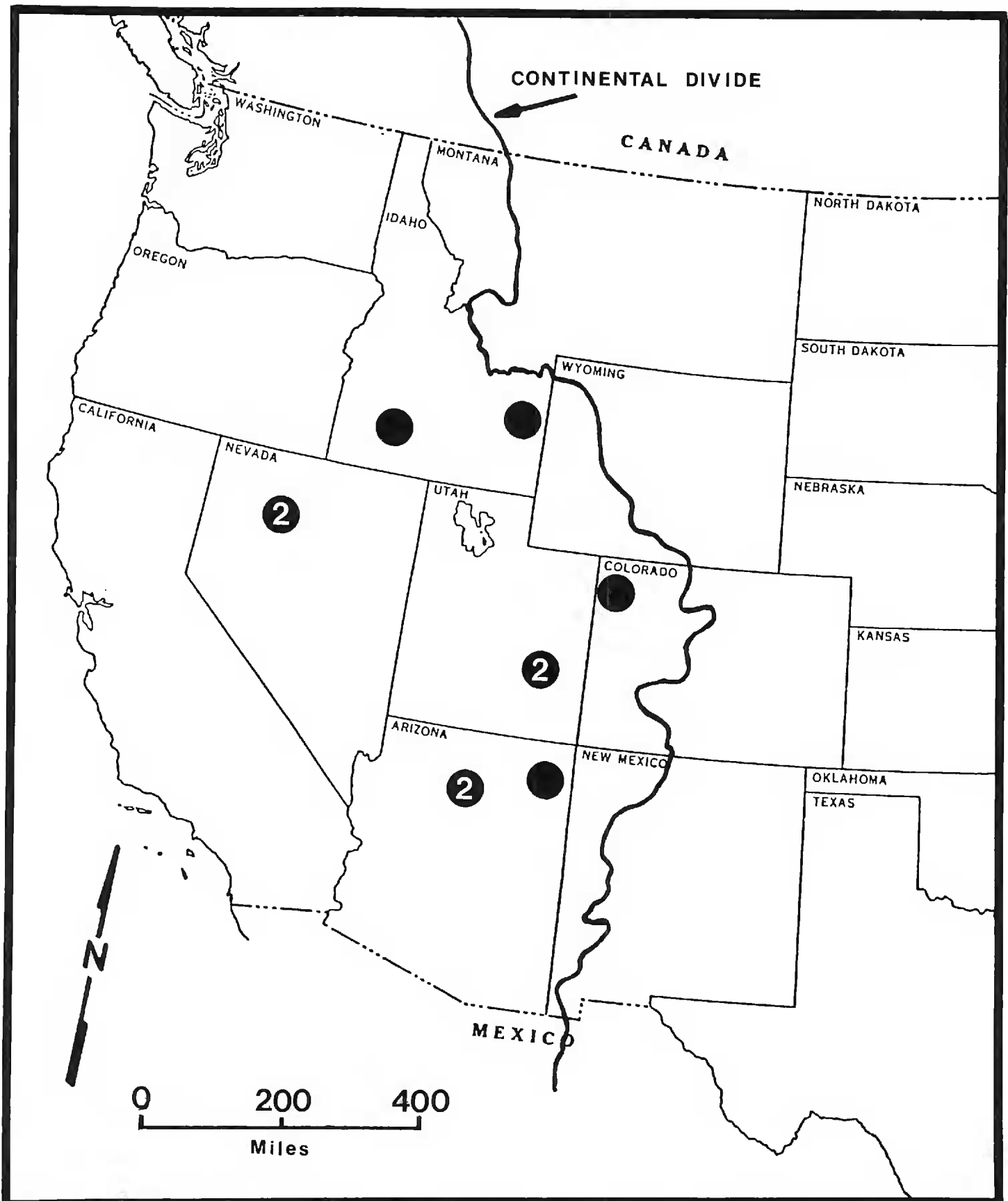


Figure 1. Distribution of *Geopinus incrassatus* LeConte in the western United States. Numerals on dots reflect number of close-by localities represented (see locality citations). Approximate location of the Continental Divide is shown.

Habitats for *G. incrassatus* east of the Rocky Mountains are apparently all riparian or related sandy soils of largely Pleistocene riverine origin. However, this is inadequately known as most specimens have been collected at lights. All western collection sites visited by us and most of those reported on specimen labels, or directly reported to us, are open desert sand dunes or are adjacent to such habitats in steppe. The dune systems with which we are familiar are composed of fine grained, aeolian deposits which are sparsely vegetated or unvegetated and are

active across their respective basins. None of these dune systems are interconnected; rather, they are separated by long distances and extensive fault-block mountain ranges.

Sand dune habitats in the Intermountain Region are of interest because of their antiquity and consequent impact on the geographical history of *G. incrassatus* and other sand dune organisms. Although surficial dunes are often presumed to be geologically young and derived from Quaternary pluvial activity, arid and semi-arid environments, including sand dune formations, have been present in the Region at least since the early Tertiary. Recent paleoecological work (e.g., Wells, 1983; Leopold and Wright, 1985, and references therein) indicates that steppe and desert conditions in the Great Basin and other portions of the Intermountain Region developed early, probably at least by the late Eocene or early Miocene. This suggests that *G. incrassatus* habitat was quite probably present and inhabited by these beetles by 10–20 million yr ago.

Comparison of western specimens of *G. incrassatus* with specimens from Maryland, Delaware, New Jersey, Indiana, Wisconsin, Kansas, Arkansas, Texas, Louisiana, and Manitoba has revealed little external morphological difference between samples. The only possibly significant difference we have noticed is that specimens from Nevada and Idaho possess 1–2 setiferous punctures on the third elytral interval. Most specimens examined from elsewhere were without such elytral punctures, but single specimens from Texas, Louisiana, and Maryland did have at least one puncture on an elytron. The frequent presence of elytral punctures in some western populations is of note because Lindroth (1968) emphasized the lack of dorsal punctation (a derived condition) as a characteristic of this species.

Geopinus incrassatus is quite able to and frequently does fly, and this cannot be discounted when considering its distribution. However, we feel that the transmontane distribution and the distinctly greater frequency of occurrence of setiferous elytral punctures, especially two punctures per interval (a plesiomorphic condition) on northern Great Basin specimens indicates segregate populations and may justify a more extensive examination of the beetles' morphology. This, with the apparently restrictive ecological relationship to sand dunes in the Intermountain Region in conjunction with available paleoecological information for the region provide an intriguing area for intensive investigation.

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